

Appl. No. Newly Filed Divisional Application (Division of 09/757,172)
Amdt. Dated December 3, 20003
Reply to Office Action of N/A

Amendments to the Specification:

Please amend lines 14 on each of pages 7 and 8 of the specification, as shown in the attached marked-up copies.

replaced, disabled or enabled without disturbing the other stations. It should be understood, however, that the strapping stations need not be modular, but a desired number of individual strapping head assemblies may be appropriately spaced from one another in the machine, depending upon the number of straps desired on the bulk box, with or without resorting to modular design.

Folded-flat bulk boxes **B** are supplied to the machine via a suitable infeed system **20**, although the boxes could be hand fed to the machine, if desired. The infeed system **20** includes an elevator means **21** for supporting a stack **S** of folded flat boxes **B** and for continuously moving the stack upwardly to position another box to be fed to the machine, and a reciprocating arm **22** connected with a source of vacuum (not shown) for picking up the top box in the stack and positioning it to be grabbed between a pinch roll **23** and drive roll or belt **24**.

After being fed into the machine, the boxes are continuously carried forward by suitable drive means such as, for example, the endless belts **24 25, 26 and 27**, as shown in figures 4A-4B, 5A-5B, 6 and 7, extending between the modules, or by rollers **R** as shown in figure 1.

Suitable sensors (not shown), such as photocells, microswitches, or the like, are positioned at each strapping station to detect the presence and position of a box at that station and cause a limit stop **28** to be moved into the path of the box to halt its movement at a predetermined position for applying straps at that station in specific locations on the box. The limit stop may comprise, for example, a pneumatic, hydraulic or electric drive **29** which moves a plunger into the path of the box in response to a signal from the sensor. The stops are located at predetermined distances downstream of their respective stations for stopping the boxes in a different position at each station to apply straps at different locations on the box than the straps applied at a preceding or succeeding station.

The boxes may be fed into the machine with either their top end or bottom end leading, but if the spacing of the straps is to be varied between the top and bottom ends of the box, appropriate adjustment will need to be made of the stop means and sensor means for each module.

For instance, at the first strapping station **11**, a pair of straps **S₃** and **S₆** are applied to the box at predetermined locations (see figure 2) in spaced apart relationship to one another (in the example shown the box is supplied bottom-end-first into the machine). The box is then advanced to the second strapping station **12**, where a second set of straps **S₂** and **S₅** are applied to the box at further predetermined locations, in spaced apart relationship to one another and to the first set of straps. Similarly, a third set of straps **S₁** and **S₄** are applied to the box at the third strapping station **13**. As noted previously, six boxes are in process in the machine at any given time, one in the infeed **20**, one at each station, and one in the discharge or outfeed stacker assembly **SA 30**. The boxes at the various stations all stop at approximately the same time, but at a further advanced position in the succeeding stations, where the straps are applied, and the boxes again advanced in unison to the next station.

A folded-flat strapped box **B'** is shown in figure 2. Obviously, a greater or lesser number of straps can be applied by increasing or decreasing the number of stations or strapping head assemblies, or by inactivating one or more of the strapping stations or strapping head assemblies.

The strapped boxes, in their folded-flat condition, may then be shipped to a customer, where the boxes may be quickly and easily erected, as shown at **B''** in figure 3, with the straps applied.

The strapping head assemblies are identical to one another, and each includes an accumulator section **30** which forms a base to support the strapping head **31** and also provides a receptacle to store pieces of strapping material cut off when a strap